BRUHATH BANGALORE MAHANAGARA PALIKE

Name of the Agency	:	**M/s. Benaka Enterprises,** Bangalore.
Name of the Work	:	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Estimate Cost	:	Rs.

QUALITY CONTROL REPORTS TO

Asst. Executive Engineer,
Vidyaranyapura Sub Division,
BBMP, Bangalore.

CIVIL-TECH CONSULTANTS & ENGINEERS

Building & Highway Material Testing Laboratory
NABL ACCREDITED LABORATOTY AS PER ISO / IEC – 17025:2005
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QUALITY CONTROL REPORTS FOR

WET MIX MACADAM (WMM)

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Job No.: CTCE/BBMP/W.No 10/BE/WMM/Gradation/2014-15

06.11.2013

GRADATION FOR WMM

MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s. Benaka Enterprises,** Bangalore.

Name of Work : Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012

Date of Testing : 06.11.2013

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7695**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	140	140	1.8	98.2	95-100
22.4	2405	2545	33.1	66.9	60-80
11.2	1185	3730	48.5	51.5	40-60
4.75	1020	4750	61.7	38.3	25-40
2.36	995	5745	74.7	25.3	15-30
0.600	890	6635	86.2	13.8	8-22
0.075	780	7415	96.4	3.6	0-8

Note:

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06.11.2013

GRADATION FOR WMM

MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s. Benaka Enterprises,** Bangalore.

Name of Work : Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012

Date of Testing : 06.11.2013

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7835**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	155	155	2.0	98.0	95-100
22.4	2385	2540	32.4	67.6	60-80
11.2	1210	3750	47.9	52.1	40-60
4.75	1085	4835	61.7	38.3	25-40
2.36	975	5810	74.2	25.8	15-30
0.600	885	6695	85.4	14.6	8-22
0.075	790	7485	95.5	4.5	0-8

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06.11.2013

GRADATION FOR WMM

MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s. Benaka Enterprises,** Bangalore.

Name of Work : Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012

Date of Testing : 06.11.2013

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7870**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	250	250	3.2	96.8	95-100
22.4	2410	2660	33.8	66.2	60-80
11.2	1105	3765	47.8	52.2	40-60
4.75	1085	4850	61.6	38.4	25-40
2.36	985	5835	74.1	25.9	15-30
0.600	850	6685	84.9	15.1	8-22
0.075	735	7420	94.3	5.7	0-8

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06.11.2013

GRADATION FOR WMM

MORTH TABLE-400-11

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Agency : **M/s. Benaka Enterprises,** Bangalore.

Name of Work : Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012

Date of Testing : 06.11.2013

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **7845**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	265	265	3.4	96.6	95-100
22.4	2250	2515	32.1	67.9	60-80
11.2	1285	3800	48.4	51.6	40-60
4.75	1050	4850	61.8	38.2	25-40
2.36	995	5845	74.5	25.5	15-30
0.600	895	6740	85.9	14.1	8-22
0.075	780	7520	95.9	4.1	0-8

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GRADATION FOR WMM

MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s. Benaka Enterprises,** Bangalore.

Name of Work : Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012

Date of Testing : 06.11.2013

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7750**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	295	295	3.8	96.2	95-100
22.4	2315	2610	33.7	66.3	60-80
11.2	1175	3785	48.8	51.2	40-60
4.75	1120	4905	63.3	36.7	25-40
2.36	980	5885	75.9	24.1	15-30
0.600	750	6635	85.6	14.4	8-22
0.075	725	7360	95.0	5.0	0-8

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Job No.: CTCE/BBMP/W.No 10/BE/WMM/AIV/2013-14

06.11.2013

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of the Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	06.11.2013

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	380	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	20.58	20.79	
	100* (W_2/W_1)%			**20.68**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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06.11.2013

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of the Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	06.11.2013

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	87	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	302	
4	Aggregate Impact value = percent fines	22.37	22.56	
	100* (W_2/W_1)%			22.46

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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06.11.2013

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of the Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	06.11.2013

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	392	393	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	90	91	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	302	
4	Aggregate Impact value = percent fines	22.96	23.16	
	100* (W_2/W_1)%			**23.06**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No 10/BE/WMM/S-T/2013-14 06.11.2013

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	06.11.2013

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **12.35%**

Elongation Index = **13.10%**

Result : Combined Flakiness & Elongation index 25.45%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No 10/BE/WMM/S-T/2013-14 06.11.2013

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	06.11.2013

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.06%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index 24.31%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No 10/BE/WMM/S-T/2013-14 06.11.2013

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	06.11.2013

Result : Flakiness Index = **12.56%**

Elongation Index = **13.10%**

Result : Combined Flakiness & Elongation index 25.66%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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QUALITY CONTROL REPORTS FOR

SEMI DENSE BITUMINOUS CONCRETE

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.10/BE/SDBC(QB)/2014-15 21.11.2013

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	:	**M/s. Benaka Enterprises,** Bangalore.
NAME OF THE WORK	:	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
REFERENCE	:	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	21.11.2013

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	84	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	44	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	296	Min. 220

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Job No.: CTCE/BBMP/W.No 10/BE/SDBC/AIV/2013-14 21.11.2013

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of the Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.11.2013

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	88	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.62	22.82	**22.72**

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

Note:

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of the Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.11.2013

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	392	393	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	89	90	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	303	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.70	22.90	22.80

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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J No.: CTCE/BBMP/W.No 10/BE/SDBC/Shape_T/2013-14 : 21.11.2013

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	: **M/s. Benaka Enterprises,** Bangalore.
Name of Work	: Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 21.11.2013

Result : Flakiness Index = **11.25%**

Elongation Index = **13.15%**

Result : Combined Flakiness & Elongation index **24.40%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

Note:

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No.: CTCE/BBMP/W.No 10/BE/SDBC/Shape_T/2013-14 : 21.11.2013

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	: **M/s. Benaka Enterprises,** Bangalore.
Name of Work	: Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	: EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 21.11.2013

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Result : Flakiness Index = **12.60%**

Elongation Index = **13.85%**

Result : Combined Flakiness & Elongation index **26.45%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No 10/BE/SDBC/Stripping/2013-14 23.11.2013

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of the work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	23.11.2013

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.40	96.60
2	3.4		
3	3.5		

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Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.10/BE/SDBC/Sp_Wa/2013-14 23.11.2013

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of the Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	23.11.2013

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2024	2025	2026	
2	Weight of basket suspended in water	W_2 g	755	2020	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1269	1270	1271	
4	Weight of saturated surface dry aggregate in air	W_3 g	2012	2013	2016	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	743	743	745	
6	Weight of oven dried aggregate	W_4 g	1998	2000	2002	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.689	2.692	2.687	2.689
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.741	2.740	2.739	2.740
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.70%	0.65%	0.70%	0.68%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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No.: CTCE/BBMP/W.No.10/BE/SDBC/Bit/2013-14 23.11.2013

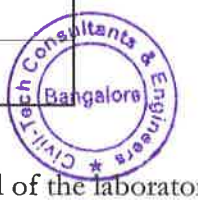
BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC:SP:-1984

CLIENT	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**M/s. Benaka Enterprises,** Bangalore.
NAME OF THE WORK	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
SAMPLE I/D	Roads inVenkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
DATE OF TESTING	23.11.2013

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	475
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	25.00
7. Bitumen content in %	5.00	5.00
8. Average	**5.00**	



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Lab No.: CTCE/BBMP/W.No.10/BE/SDBC/Bit/2013-14 23.11.2013

BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**M/s. Benaka Enterprises,** Bangalore.
NAME OF THE WORK	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
SAMPLE I/D	Roads inVenkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
DATE OF TESTING	23.11.2013

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	24.35	5.13	5.13	94.87	90-100
4.75	258.3	54.38	59.51	40.49	35-51
2.36	61.22	12.89	72.39	27.61	24-39
1.18	40.25	8.47	80.87	19.13	15-30
0.3	35.26	7.42	88.29	11.71	9-19
0.075	31.22	6.57	94.86	5.14	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	28.56	6.01	6.01	93.99	90-100
4.75	268.3	56.48	62.50	37.50	35-51
2.36	59.32	12.49	74.99	25.01	24-39
1.18	37.21	7.83	82.82	17.18	15-30
0.3	30.22	6.36	89.18	10.82	9-19
0.075	24.21	5.10	94.28	5.72	3-8

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Job No.: CTCE/BBMP/W.No.10/BE/SDBC/AGG/2013-14 23.11.2013

Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s. Benaka Enterprises,** Bangalore.
Name of the Work	Metalling and Asphalting to roads in Venkatagirayappa Layout in Ward No.10, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-TND/389/2011-12 Dated: 15.03.2012
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	23.11.2013

Total Weight of Sample: **5200** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	385	7.4	7.40	92.60	90-100	
4.75	2510	48.3	55.67	44.33	35-51	
2.36	675	13.0	68.65	31.35	24-39	
1.18	470	9.0	77.69	22.31	15-30	
0.3	480	9.2	86.92	13.08	9-19	
0.075	355	6.8	93.75	6.25	3-8	

Total Weight of Sample: **5300** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	360	6.8	6.79	93.21	90-100	
4.75	2505	47.3	54.06	45.94	35-51	
2.36	785	14.8	68.87	31.13	24-39	
1.18	415	7.8	76.70	23.30	15-30	
0.3	360	6.8	83.49	16.51	9-19	
0.075	510	9.6	93.11	6.89	3-8	

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